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BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
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In Cooperation with State, Federal and Other Agencies

COTTON INSECT CONDITIONS - SEPTEMBER 8, 1951
(Twelfth Cotton Insect Survey Report for 1951)

This has been a year of relatively light insect damage to cotton as compared with the very serious losses caused by the boll weevil in 1949, and by the boll weevil, cotton leafworm, and bollworm in 1950. The record-breaking hot, dry weather during July, August and the first week of September in most of the cotton-growing States did much to reduce the boll weevil population. The hot, dry weather also aided in holding down the infestations of bollworms and possibly other insects. Insecticides have been used more generally this year for the control of cotton insects than during any previous year, except 1949 and 1950. In some states practically every cotton grower used insecticides for the control of cotton pests during 1951. Serious infestations of the boll weevil during 1951 were scattered and occurred chiefly where early fall destruction of the cotton stalks or chemical defoliation before frost was not practiced in 1950, where there were favorable hibernating quarters, or where the growers did not apply insecticides properly when needed.

The cotton leafworm did not reach the United States until much later than usual and has not caused any serious damage this year.

The cotton fleahopper and the cotton aphid infestations were generally light and these pests caused less damage than usual.

Conditions have been favorable for the spider mites and several species of spider mites have combined to cause serious damage in all cotton-growing States between the Atlantic and Pacific Oceans. More different chemicals have been used for the control of the spider mites than ever before.

The garden webworm, Loxostoma similalis, the yellow-striped armyworm, Prodenia ornithogalli, and the granulate cutworm, Feltia subterranea, were wide-spread and caused serious damage to cotton in Texas, Oklahoma, Louisiana, Mississippi, Alabama, Georgia and other States. The bollworm, Heliothis armigera, and the tobacco budworm, H. virescens, were also widely distributed and in many places it would be difficult to determine which species caused the greater damage to cotton.

Immediate Attention: Never before since the boll weevil reached the United States more than fifty years ago have the cotton growers had such an opportunity to reduce the boll weevil infestation for the following season. Early fall cutting of the cotton stalks is the most effective and practical method of fighting the boll weevil and pink bollworm. Thousands of fields of cotton in southern Texas and to a less extent in other States did not need insecticides for boll weevil control in 1951, because the cotton stalks in those and surrounding fields had been cut in August and September 1950. However, on September 1, 1950 less than 860,000 bales of cotton had been ginned, but by September 1, 1951 more than 2,000,000 bales had been ginned. On hundreds of thousands of acres in twenty counties in southern Texas, the cotton stalks have now been cut. On millions of other acres where the cotton has been harvested, the stalks should be cut immediately. This practice should be followed on every farm that is infested with either the boll weevil or the pink bollworm.

The Census Bureau reports that by September 1, more than 1,150,000 bales of cotton had been ginned in Texas, more than 217,000 bales had been ginned in Georgia, 175,000 bales in Alabama, 168,000 bales in Louisiana, 152,000 bales in Mississippi, 123,000 bales in South Carolina, 8,000 bales in Florida and 5,000 bales in Arkansas. Several million bales will be ginned during September.

All cotton farmers who remember what the boll weevil did to their cotton in 1949 or 1950 should not need any encouragement to make every effort to cut the cotton stalks immediately. Every entomologist, County Agent, and farmer should keep constantly in mind that there is no better way of fighting the boll weevil and pink bollworm than by getting the stalks cut as early as possible to prevent continued feeding and breeding of these insects. Each farmer who follows this practice will have fewer boll weevils and pink bollworms in his cotton fields next year than if he does not get the stalks cut early.

Insecticides on Late Cotton: Cotton planted during June and July is not yet mature. These fields should be examined frequently and insecticides applied when needed. Late planted cotton is likely to become seriously infested by insects. If other conditions are favorable, there is no reason why insects should seriously reduce the yield in any cotton field. Insecticides are now available that will control any of the insects that may become abundant in late-planted cotton. Last year some insecticide applications were needed as late as October 1.

Notes of Interest: On August 21, W. A. Ruffin, Extension Entomologist, wrote: "We have had some fields of cotton in Alabama damaged this year by boll weevils, bollworms, yellow-striped armyworms, granulate cutworms, aphids, and spider mites; whereas, in 1950 our only real problem was boll weevil."

On September 1, John W. Wilson, Entomologist, Sanford, Florida, wrote: "I am in complete agreement regarding the control of boll weevils by early destruction of cotton stalks. At every opportunity I have discussed this matter with growers in this area and have urged them to destroy the stalks as soon as the harvesting of cotton is completed. In many cases it is not necessary to urge the growers in Seminole County to destroy cotton stalks as they use the land for winter vegetable production. However, as in other areas, we have some growers who fail to appreciate the advantages of early cotton stalk destruction. In other cases the cotton is planted late and the chances are that the stalks in these late planted fields will not be destroyed. I know of at least one 20 acre field in Seminole County that was planted on July 5 of this year."

Recommended Reading: The "Conference Report on Cotton Insect Research and Control, Memphis, Tennessee, December 4-6, 1950" is still available for distribution. For the cotton-growing States from the Atlantic Coast to Oklahoma and Texas, there is no better authority on cotton insect control than this conference report.

BOLL WEEVIL

Virginia: Wayne L. Howe, Associate Entomologist, Tidewater Field Station, Holland, wrote on August 30: "Examination of six cotton fields in Nansemond County shows an average of 32% boll weevil injury to squares. Large bolls in the same fields do not yet show serious weevil injury but bollworm injury varied from 8% to 12%."

Alabama: Conrad J. Ward reported for the week ending September 1 that: "Boll weevil infestations are becoming heavier, but this is probably due to the fact that so few squares are present. In many cases the weevils are puncturing almost mature bolls. A number of bolls were noted with three or more weevil larvae in

them." The infestations are, however, still spotted as Mr. Ward examined 8 fields in Lamar, Lauderdale, Morgan, Franklin, Fayette, and Tuscaloosa Counties in which no punctured squares were found. Boll weevils were found in 43 of the 51 fields examined in 10 counties in the northwestern section of the State. Only 5 fields had more than 75% of the squares punctured; in 11 fields the infestations ranged from 51 to 75% punctured squares. In 10 fields the infestations ranged from 25 to 51% punctured squares and in 17 infested fields, less than 25% of the squares were punctured. The average percent infestation in all of the 51 fields examined in the 10 northwestern counties was 33% and the average infestation in the 43 infested fields was 39% punctured squares.

Mississippi: Boll weevils were found in 270 of the 325 fields examined in the four Delta Counties - Bolivar, LoFlore, Sunflower and Tallahatchie - during the week ending August 17. In the infested fields an average of 14% of the squares were punctured as compared to 11% last week and 27% last year when all fields examined were infested. The average infestation for all of the 325 fields examined was 12% punctured squares. Eighty-three percent of the fields were infested last week as compared with 76% the previous week. Only 9 fields, all in Bolivar County, had more than 50% of the squares punctured and the infestations ranged from 51% to 73% punctured squares. Thirty-eight of the fields had 26 to 50% punctured squares, 89 between 11 and 25% punctured squares, and in 18 fields the infestations did not exceed 10% punctured squares.

Missouri: During the week ending August 17 boll weevils were found in 16 of the 76 cotton fields examined in 8 southeastern counties. In the infested fields there was an average of about 10% punctured squares and the average in all 76 fields examined was 2% punctured squares. The heaviest infestations observed were in Butler County where weevils were found in 9 of the 11 fields examined. One field had 53% of the squares punctured and the next highest infestations were 17% and 23% punctured squares. In Ripley County weevils were found in 3 of the 4 fields examined with the highest infestation 18% punctured squares. A few scattered boll weevil infestations were found in Mississippi, Scott and Stoddard Counties. No boll weevils were found in the 35 fields examined in Dunklin, New Madrid and Pemiscot Counties. These records show that the boll weevil survived the severe winter of 1950-51. The high temperatures this summer have helped to hold down the weevil populations. It was estimated that boll weevils reduced the yield of cotton only 1% in Missouri in 1950. If conditions should be favorable for the weevils during August and September, they could cause more damage this year than in 1950, especially in Butler and Ripley Counties.

Illinois: During the week ending August 17 10 cotton fields were examined in Alexander and Pulaski Counties. One field in Pulaski County had 2% of the squares punctured by boll weevils. This is the first authentic record of the occurrence of the boll weevil in Illinois that has reached this office for several years. The weevils are not likely to become numerous enough this season to cause any serious reduction in yield, but it will be of interest to determine the extent to which they spread throughout the cotton-growing areas of Illinois, the damage they cause this year, and if they survive the winter of 1951-52.

Kentucky: During the week ending August 17 boll weevils were found in 3 of the 10 fields examined. Light infestations were found in 2 of the 3 fields examined in Fulton and in 1 of the 7 fields examined in Hickman County. These are the first authentic records of the occurrence of the boll weevil in Kentucky that have reached this office for several years. The weevils are probably too few in number to cause serious losses this season, but it will be of interest to note the

extent to which the weevils spread throughout the cotton-growing counties of Kentucky and the amount of damage they cause during August and September. It will also be of interest to determine if the weevils survive the high temperatures that prevailed during August and early September, and if they survive the coming winter.

Oklahoma: C. F. Stiles, Extension Entomologist, wrote on August 25: "Dry weather has caused enormous damage but it failed to check the boll weevil in most instances. Cotton in Oklahoma has to be seriously damaged by heat and dry weather before it has much effect on the weevils. This summer I picked live grubs from fallen squares beneath the plants where the air temperature had been 100 degrees or more for three consecutive days. Boll weevils are pretty generally distributed over the State this season but their numbers in no way compare to the large numbers that were present in southwestern Oklahoma last year. I was unable to find any boll weevil punctures or live boll weevils in Blaine, Custer or Dewey Counties this week. There had been a few reported from these counties, and I am sure there are a few there, but we just didn't find them."

The Oklahoma Weekly Crop and Weather Bulletin for the week ending August 14 stated that the boll weevil was "still doing extensive damage in untreated cotton fields where control measures were too limited." In the Bulletin for the week ending August 21 it is stated that "boll weevil activity has declined considerably and many farmers have used adequate control measures."

PINK BOLLWORM

Texas: The Division of Pink Bollworm Control reported that new infestations of the pink bollworm were discovered in Burleson, Waller and Washington Counties during the last week of August.

J. I. Cowger reported on August 28 that pink bollworms have been found thus far in 1951 in 46 counties in the pink bollworm regulated area of Texas, including Austin, Bastrop, Bee, Brazoria, Caldwell, Colorado, DeWitt, Duval, Fayette, Ft. Bend, Gonzales, Hayes, Lavaca, Lee, Live Oak, Jim Hogg, Jim Wells, Kleberg, Matagorda, McMullen, Refugio, San Patricio, and Travis Counties where pink bollworms were found during the week ending August 25, either by the inspection of gin trash or cotton blooms. On September 5 Mr. Cowger reported that pink bollworms had been found in Burnet and Milan Counties, making a total of 48 counties in the pink bollworm regulated area of the State where infestations of pink bollworms had been found this year by gin trash examinations.

Louisiana: The Division of Pink Bollworm Control reported the reappearance of the pink bollworm in Vermilion Parish during the last week of August.

COTTON LEAFWORM

Oklahoma: C. F. Stiles, Extension Entomologist, Stillwater, wrote on September 8: "Dr. Fenton just requested me to inform you that on the night of September 6 he found one cotton leafworm moth in a trap light. This moth was identified by Dr. Fenton and Dr. Dogger. He said it was a fresh moth that was perfect in every way."

Texas: The cotton leafworm, Alabama argillacea, was reported in a letter dated September 6 from Marshall O. Thompson, Asst. in Marketing, Extension Service, State College, New Mexico, to have reached El Paso County, Texas. He wrote:

"The leafworm has been found in this valley south of Canutillo, El Paso County, Texas, and has been definitely identified by Mr. Reid Faulkner, Entomologist of the New Mexico Experiment Station. Mr. Faulkner says that there seems to be no cause for alarm as this was the only specimen found."

The cotton leafworm was also found in Mitchell County in the western part of the State on August 9. Specimen was collected by J. D. Yarcho and submitted for identification by K. P. Ewing.

Florida: On August 11 J. W. Wilson, Entomologist, Central Florida Experiment Station, Sanford, submitted 2 lots of the cotton leafworm, Alabama argillacea (Hbn.) that were collected near Reddick in the northern part of Marion County on August 7 and near Goldenrod on the northern border of Orange County on August 9. These are the only cotton leafworms that have been received from the United States this year, except from Texas.

BOLLWORMS, CUTWORMS AND OTHER LEPIDOPTEROUS LARVAE ON COTTON

Virginia: Wayne L. Howe, Associate Entomologist, Tidewater Field Station, Holland, reported on August 30 that from 8 to 12% of the large bolls in six cotton fields in Nansemond County had been injured by bollworms.

South Carolina: G. C. Finklea and R. L. Walker, Florence, made collections from 4 fields on July 24 and 25 that consisted of 6 bollworms, Heliothis armigera (Hbn.), from 3 fields and 1 tobacco budworm, H. virescens, from the fourth field.

Georgia: On May 23 C. M. Beckham collected specimens of the granulate cutworm, Feltia subterranea (Fabr.), from soil at the base of cotton plants in Fayette County. He also collected specimens of the bollworm, Heliothis armigera (Hbn.), from cotton leaves in Fayette County on June 5 and in Meriwether County on June 6.

Florida: On July 20 J. W. Wilson, Entomologist, Central Florida Experiment Station, Sanford, submitted 3 collections made from cotton near Sanford during July. The collection made on July 11 consisted of 13 tobacco budworms, Heliothis virescens (Fabr.), and 7 bollworms, H. armigera (Hbn.). The collection made on July 16 consisted of 5 tobacco budworms and 10 bollworms. The collection made on July 22 consisted of 8 yellow-striped armyworms, Prodenia ornithogalli Guen., and 1 bollworm. In these 3 collections made at Sanford during July there were 18 tobacco budworms, 18 bollworms, and 8 yellow-striped armyworms.

Alabama: Conrda J. Ward found bollworms in 23 of the 51 cotton fields examined in 10 counties in the northwestern section of the State during the week ending September 1. Approximately 3% of the squares in all the 51 fields examined had been destroyed by bollworms. The infestation averaged 6% in the 23 infested fields. In Cullman County bollworms were found in 3 of the 6 fields examined. In 2 of these fields, 14 and 15% of the squares had been destroyed by bollworms. In Marion County bollworms were found in only one of the 4 fields examined, but in that field, the bollworms had destroyed 11% of the squares. Fields with 8% squares destroyed by bollworms were noted in Fayette and Limestone Counties and fields with 7% of the squares destroyed by bollworms were observed in Colbert and Morgan Counties.

Dr. F. S. Arant, Auburn, wrote on August 9 that the granulate cutworm, Feltia subterranea (Fabr.), and the yellow-striped armyworm or cotton boll cutworm, Prodenia ornithogalli Guen., occurred in tremendous numbers in the cotton fields

of Morgan County in northern Alabama. The granulate cutworms were especially numerous and were attacking the stalks and limbs of the cotton plants. The yellow-striped armyworms were present in smaller numbers and were confining their attacks chiefly to the cotton squares.

W. A. Ruffin, Extension Entomologist, wrote on August 21: "We have found the granulate cutworm doing more or less damage in a number of fields of cotton in the northern part of the State. Insofar as I have been able to observe, the granulate cutworm is the only species that has been present in fields where cutworms were found. We have found also some population of the yellow-striped armyworm in fields where the predominant species was the bollworm doing damage to squares."

On August 22 Mr. Ruffin wrote: The cutworms which we found doing some damage to a number of fields of cotton this year is the granulate cutworm, Feltia subterranea. It is interesting to me to observe that these insects were found largely in cotton that came up about the 15th of June. During the last ten days of June we had a number of general rains over the State which prevented proper cultivation of these young fields of cotton and the fields got very grassy. The moths were evidently attracted to the grass in the cotton fields and after the crop was cleaned out the worms had nothing but the cotton to feed on. I found the worms causing some ragging to leaves and the tops of plants that were two feet high. This is the first time that I have observed cutworms on this size cotton in Alabama.

On August 14 Conrad J. Ward collected 1 granulate cutworm, Feltia subterranea (F.), and 20 yellow-striped armyworms, Prodenia ornithogalli Guen., from cotton in Limestone County in the northern part of the State.

Mississippi: Fourteen vials containing 90 lepidopterous larvae collected from cotton in four Delta Counties between July 2 and July 18 by Messrs. Calhoun, Courtney, Davis, Dunnam, and McGehey included 10 species representing the larvae of 3 families of moths. There were 67 larvae representing 7 species of Phalaenidae, including 21 bollworms, Heliothis armigera (Hbn.), from Bolivar, Washington and Sharkey Counties; 13 tobacco budworms, H. virescens (Fabr.), from the same counties; 14 black cutworms, Agrotis ypsilon (Rott.), 12 granulate cutworms, Feltia subterranea (Fabr.); 3 fall armyworms, Laphygma frugiperda (JESmith); 3 loopers of Autographa group, and 1 yellow-striped armyworm, Prodenia ornithogalli Guen., from Washington County. From Washington County there were 5 garden webworms, Loxostege similalis (Guen.), and 2 Nomophila noctuella (D. & S.) of the family Pyraustidae, and 15 specimens of a leafroller, Platynota sp. of the family Tortricidae.

Texas: On August 2 K. P. Ewing submitted 11 vials of lepidopterous larvae collected from cotton in 7 counties between July 16 and 31. The 52 specimens included 22 bollworms, Heliothis armigera (Hbn.), from Austin, Calhoun, Fort Bend, Jackson, and Wharton Counties; 9 tobacco budworms, H. virescens (Fabr.), from Austin, Jackson, and Wharton Counties; 8 salt-marsh caterpillars, Estigmene acrea (Drury), from Calhoun, Hale and Wharton Counties; 14 garden webworms, Loxostege similalis (Guen.) from Dawson County, and 1 "looper" of the Autographa group from Austin County.

R. W. White, Leader, Pink Bollworm Project, wrote on August 1: "The bollworm is reported as doing considerable damage in the Pecos section and is beginning to make its appearance in the El Paso and Mesilla Valleys. The recommended poisons are being applied." (El Paso County Texas, and Dona Ana County New Mexico)

Oklahoma: The Oklahoma Weekly Crop and Weather Bulletin for the week ending August 14 stated that bollworms were "still doing extensive damage in untreated cotton fields and where control measures were too limited." The Bulletin for the week ending August 21 stated that bollworm infestation has declined somewhat after doing extensive damage.

Arkansas: Charles Lincoln, Entomologist, wrote on August 25: "We have had and are having a major outbreak of bollworm. It was brought on in part by a fairly heavy acreage of corn followed by a period of no-silking corn. Control has generally been good. We have used for the most part 10% DDT alone or in combination with 3% gamma BHC. According to Mr. Isely our bollworm outbreaks have generally occurred in dry summers. Of course, we know that hot, dry weather in Texas will desiccate the eggs and prevent an outbreak. I suppose that hot, dry weather in Arkansas just isn't as hot and dry as hot, dry weather in Texas."

SPIDER MITES

South Carolina: G. C. Finklea and R. L. Walker, Florence, collected spider mites on cotton on July 25 and 26 from 4 fields that were determined as Septanychus texazona McG. and the mites from another field were determined as Tetranychus multisetis McG. Septanychus texazona McG. was found on cotton at Florence on August 9 by L. C. Fife.

Alabama: F. S. Arant, Auburn, collected spider mites on cotton at Belle Mina, Limestone County, and Crossville, DeKalb County, on August 25. When Dr. E. W. Baker determined these mites as the strawberry spider mite, Tetranychus atlanticus McG., he stated that this species is very closely related to the two-spotted spider mite, Tetranychus bimaculatus Harvey. The females cannot be separated, and only the size of the aedeagus will separate the males. Concerning these spider mites Dr. Arant wrote on August 25: "I spent two days in cotton fields in North Alabama this week. Damage from spider mites and dry weather is extensive in several localities. The most severe damage observed was in Limestone County, north of Decatur in the Tennessee Valley. Some severe damage was apparent also in Madison County. Cotton was suffering to some extent from drouth and spider mites in most of the area from Marion County to DeKalb County.

"It is difficult to evaluate the role of dry weather and that of spider mites in this area. The mite infestations are most intense in the areas of severe drouth. Some fields of 100 acres or more are practically defoliated except for occasional low spots where some soil moisture remains.

"It has been interesting to note that in areas where the population of mites has been reduced to a satisfactory level with miticides the cotton has failed to recover because of lack of moisture.

"Mr. Fred Stewart, Superintendent of the Tennessee Valley Substation, of the Agricultural Experiment Station, stated that he has never seen such extensive or severe damage to cotton from drouth and spider mites in the more than 20 years since the Station was established.

"Farmers have been using sulphur, parathion, EPN, and aramite for control of mites with varying degrees of success. Generally, materials applied as low-gallonage sprays have failed to give control. Dusts in general have been more successful."

W. A. Ruffin, Extension Entomologist, wrote on August 21: "I am sure you will be interested to know that for the first time in all my experience with cotton insects, we are finding large acreages of cotton in the Tennessee Valley and Sand Mountain areas being damaged by spider mites."

Red spider mites were observed in 20 of the 51 fields examined in 10 counties in northwestern Alabama during the week ending September 1. Conrad J. Ward reported that 5 of these fields were suffering severe damage, 7 were moderately infested and in 8 fields there were only small plots where spider mites were present.

Arizona: Two species of spider mites were prevalent on cotton in Arizona this summer. Between June 20 and July 5, Septanychus texazona, McG., was collected in Graham, Pima, and Pinal Counties by William Kauffman and Lawrence Nicholson, and in Maricopa County by W. A. Stevenson and Louis Sheets. The two-spotted spider mite, Tetranychus bimaculatus, Harvey was found in Graham County and at three localities in Yuma County by Kauffman and Nicholson.

THRIPS

Georgia: The Fifth Survey Report issued in June stated that C. M. Beckham had reported on June 7 that thrips were severely injuring cotton in northcentral Georgia. The thrips he collected from cotton in Henry County on June 4 represented 5 species of the family Thripidae. The order of their relative abundance, based on the specimens submitted for determination, is as follows: the tobacco thrips, Frankliniella fusca (Hinds); the onion thrips, Thrips tabaci Lind.; the grain thrips, Limothrips cerealium Hal., Sericothrips sp., probably variabilis (Beach), and Frankliniella exigua Hd. The specimens he collected from cotton in Spalding County on June 5 and 6 represented six species. The order of their relative abundance, based on the specimens submitted for determination, is as follows: the tobacco thrips, F. fusca (Hinds); the onion thrips, Thrips tabaci Lind.; Sericothrips sp. probably variabilis (Beach); the flower thrips, Frankliniella tritici (Fitch), and the grain thrips, Limothrips cerealium Hal., of the family Thripidae, and a predaceous species, Aeolothrips bicolor Hinds, of the family Aeolothripidae.

Arizona: On June 20 Louis Sheets collected many thrips on cotton at Eloy, Pinal County. The onion thrips, Thrips tabaci Lind., was most abundant, but there were nearly as many Frankliniella exigua Hd., and a few of another species of Frankliniella, possibly F. inornata Mlt., On July 4 he made another collection at Eloy that consisted chiefly of a species of thrips that is apparently undescribed, but included some F. exigua Hd. and some of the onion thrips, T. tabaci Lind.

MISCELLANEOUS INSECTS

Florida: On August 10 Herman S. Mayeux, Jacksonville, submitted two species of weevils that had been found feeding on cotton foliage in Marion County on July 18 by Sam Vaughn. These weevils were determined as Epicaerus formidolosus Boh. and Tanymecus sp. (Iacana complex) by R. E. Warner.

Alabama: Conrad J. Ward reported that during the week ending September 1 aphids were noted in only 7 of the 51 fields examined in 10 counties in the northwestern part of the State but severe damage was not observed in any field. He reported white-flies on cotton in 3 of the 51 fields. The 3 fields where white-flies were observed had been dusted with DDT for bollworm control.

Arizona: Trialeurodes abutilonea (Hald.), a white fly of the family Aleyrodidae was found abundantly on cotton at Eloy, Pinal County, on July 7 by William Kauffman and Lawrence Nicholson.

The cowpea aphid, Aphis medicaginis Koch, and the cotton aphid, Aphis gossypii Glov. were abundant on cotton at Eloy, Pinal County, on July 4. (Collected by Louis Sheets, and determined by L. M. Russell)

Texas: K. P. Ewing collected some leaf-eating caterpillars feeding on cotton in McLennan County on August 6 that were determined as Platynota sp. of the family Tortricidae.

Mississippi: Nymphs of the two-striped grasshopper, Melanoplus bivittatus (Say), were reported as feeding on cotton in Sunflower County on June 14 by W. N. Batson (sub. by E. W. Dunnam, determination by A. B. Gurney).

COTTON INSECT CONDITIONS IN VIRGINIA

J. O. Rowell, Extension Entomologist, Blacksburg, issued a statement on August 30 as follows: "Bollworm damage has been reported from Greenville County. It is probable that this insect is present and is causing damage in several or all of the other cotton-producing counties of the State. However, damage does not appear to be widespread at the present time. The boll weevil control program, if carried out in its entirety, will keep this insect under control. However, during the rainy period in August, many cotton growers stopped dusting, giving the bollworm an opportunity to develop in cotton fields. Cotton producers are urged to resume immediately the regular boll weevil control treatments, using either 20% toxaphene dust or the 2 $\frac{1}{2}$ % aldrin plus 5% DDT dust mixture. Either of these dusts, used as recommended in the boll weevil control program, will also control the bollworm, provided the applications are made before the insects bore into the cotton bolls."

COTTON INSECT CONDITIONS IN OKLAHOMA

Excerpts from Oklahoma Weekly Crop and Weather Bulletin; August 28: "Bollworm infestation has been on the decline. Boll weevil migration has been underway. Infestation is very light in many western counties but heavy in many fields in eastern areas. Poisoning is continuing in late cotton fields."

September 4: "Boll weevil and bollworm infestation was widespread but damage during the week was not extensive because of hot weather and use of insecticides where needed."

COTTON INSECT CONDITIONS IN ARIZONA

Notes From Cotton Insect Report for Week Ending September 7 by J. N. Roney, Extension Entomologist: Maricopa County: Bollworms, spider mites, aphids and stink bugs have been reported in some of the cotton fields but only in small numbers.

Pima County: "Aphids are becoming very abundant in a number of fields and some dusting is under way. Bollworms are also fairly numerous and controls are under way."

Pinal County: A few bollworms and aphids are reported.

Graham County: "Dusting is fairly general in the Safford Valley for the control of bollworms. A few stink bugs are appearing but not enough to warrant control."

Lygus are causing injury in the late-planted fields."

Cochise County: "Bollworms continue to be a problem and control measures are in progress."

Santa Cruz County: "Bollworms are a problem and control measures are in progress. Aphids are also appearing in some fields."

COTTON INSECT CONDITIONS IN CALIFORNIA

Gordon L. Smith and Thomas F. Leigh reported on August 15: "San Joaquin Valley -- The spider mites Tetranychus atlanticus McG., T. bimaculatus Harvey and T. pacificus McG., continue to be the major pests of cotton for which control is being used. Some small areas are infested with Sestanychus texazona McG. and the red phase of T. bimaculatus, (T. multisetis). To reduce the hazards of most organic phosphate insecticides to bees, livestock and men, TEPP by airplane sprays has been recommended for control of spider mites (all species) and aphids for the remainder of the 1951 season. Two applications four days apart are recommended for the control of mites.

"Bollworms - Although not a general problem this pest has increased in importance throughout the valley and control is frequently combined now with control of mites and aphids.

"Lygus bugs have built up to the economic level in many fields particularly those bordering on alfalfa.

"Aphids and whiteflies - The cotton or melon aphid, Aphis gossypii Glover, and several species of whiteflies have been much more common on cotton in this valley during 1951 than in the past several years. Scattered infestations have required control in comparatively few fields prior to August. They are now quite general pests of cotton. Control is most needed to protect the fiber from honeydew and fungus.

"Bean thrips - Hercothrips faciatius Perg., is later than usual in its attack on cotton. On the west side of the valley where control is usually required only a small amount of control has yet been used this season.

"The airplane operators have been unusually busy with applications of acaracides and insecticides during the past month. Aramite and toxaphene which were very short in supply during July are somewhat more available now.

The following insects which attack cotton in this valley have been only occasional and of little importance: yellow-striped armyworm, Prodenia praefica Grote; beet armyworm, Laphygma exigua Hbn.; cotton square borer, Strymon melinus (Hbn.); green leafhopper, Empoasca abrupta DeLong (numerous but of little importance); potato leafhopper, E. fabae Harris (causes a specific severe injury to cotton near the Sierra Nevada foothills); and salt-marsh caterpillar, Estigmene acrea (Drury)."

H. T. Reynolds and Ed Swift reported August 15: "Imperial Valley -- The bollworm has become a problem in many fields in both Coachella and Imperial Valleys. Many fields have been dusted with 5% DDT plus 75% sulfur and the results appear to be satisfactory. Lygus bugs are present in practically all fields but have been reduced to a low population by the DDT-sulfur combination. Very few fields have more than 5 lygus per 100 sweeps. Mites are a problem in some fields. The

atlantic mite has been very well taken care of by sulfur applications, but the carmine phase of the two-spot (or T. multisetis) is our predominant form and is somewhat more difficult to kill with sulfur. In most fields the combination of sulfur and predators has been satisfactory. A few growers have used parathion.

"Stink bugs are found occasionally in the Imperial Valley but in few instances, as yet, have constituted a problem. Salt-marsh caterpillars are beginning to cause some leaf damage, usually on the field margin, in both Coachella and Imperial Valleys. Some growers probably will try trimming the field margins with 15% toxaphene plus 5% DDT. White-flies are becoming abundant in many fields in both areas and may become serious in some instances. The cotton leaf perforator can be found occasionally but has not been a problem. In the Imperial Valley crickets have damaged some cotton squares and small bolls to the extent that a few growers have treated with chlordane dust.

"The cotton in general looks good. Many fields have lots of open bolls, though most fields are not quite that far along."

George J. Harrison, U. S. Cotton Field Station, Shafter, wrote on August 18: "All day my telephone has been troubling me with calls concerning the control of spider mites and corn earworms in cotton. Nearly all sections of the San Joaquin Valley, and one call from the southern portion of the State have been heard from within the past eight hours. Some from growers, some from insecticide salesmen and others from the airplane pilots themselves. Judging from these calls, the infestation of both mites and bollworms is widespread, but how general it is not clear. Without doubt the several species of spider mites are increasing in importance in California cotton. Fortunately this station has so far escaped with only minor injury from them, but several of our neighbors are starting on their third round of control operations. Aphids have been very general in the Shafter area, but from all indications are well under control at the present time."

Stewart Lockwood, Entomologist, State Department of Agriculture, Sacramento, wrote on August 27: "Most of the spider mites now active in cotton in California are the two-spotted mite.

"Control of the Pacific mite, Tetranychus pacificus, as well as the two-spotted mite, T. bimaculatus, is not readily accomplished with sulfur, although years ago sulfur dust seemed to do a better job than it does now.

"So far as I know the mite, Septanychus deserticola, is not a serious pest to any crop in this State. However, spider mites seem to have done very well this year."

Excerpts from WEEKLY COTTON WEATHER BULLETIN, U. S. DEPARTMENT OF COMMERCE, NEW ORLEANS, LOUISIANA, September 4: Texas: Farmers Lower Valley pressing to complete harvest and stalk destruction by September 15th deadline. Oklahoma: Weather favorable reducing or holding weevils in check. Arkansas: Unseasonably high day time temperatures thruout most week; another week dry weather caused deterioration crops; Louisiana: Heat climaxed hottest summer of record. Cotton deteriorated badly north where opening prematurely with small bolls and short staple; top bolls shedding badly; too late for rains to help except late cotton which not holding fruit; all cotton open south; picking very active entire state; Mississippi: Continued hot dry weather climaxed hottest summer of record. Tennessee: Cotton opening rapidly; prospects vary from fair to good. Alabama: Temperatures averaged about 8° above normal. Georgia: Abnormally warm week. South Carolina: Favorable

for checking weevil. Arizona: Bollworm prevalent all areas; widespread dusting underway. New Mexico: Cotton doing well generally but heavy insect infestation requiring continuous dusting; some damage in Las Cruces area.

September 11: Arkansas: Insect control program will end soon. Arizona: Bollworm increase following heavy rains last month.

CORRECTION: On page 14 of the Second Cotton Insect Survey Report for 1951, that discussed cotton insect conditions to May 18, there are errors in regard to the reduction from full yield of cotton in Missouri caused by "Other Insects" and "All Insects" in 1948, 1949 and 1950. The corrected tables are as follows:

ESTIMATED PERCENT REDUCTION FROM FULL YIELD OF COTTON CAUSED BY THE BOLL WEEVIL, OTHER INSECTS, AND ALL INSECTS IN THE 13 LEADING COTTON-GROWING STATES WHERE THE BOLL WEEVIL OCCURS IN 1948, 1949, and 1950. (FROM REPORTS OF THE CROP REPORTING BOARD OF THE BUREAU OF AGRICULTURAL ECONOMICS, U.S.D.A)

State	Boll Weevil			Other Insects			All Insects		
	1948:	1949:	1950:	1948:	1949:	1950:	1948:	1949:	1950:
Missouri	0	0	1	2	1	6	2	1	7
Virginia	2	23	63	0	2	1	2	25	64
North Carolina	6	27	54	1	1	2	7	28	56
South Carolina	13	29	31	1	2	3	9	31	34
Georgia	7	35	25	2	2	4	15	37	29
Florida	1	18	22	1	2	3	8	20	25
Tennessee	7	13	19	1	0	2	2	13	21
Alabama	4	31	33	1	1	2	8	32	35
Mississippi	4	27	23	0	1	2	4	28	25
Arkansas	4	25	26	1	1	3	5	26	29
Louisiana	3	15	27	1	1	3	4	16	30
Oklahoma	10	8	29	2	2	12	12	10	41
Texas	4	3	12	3	3	7	7	6	19
Ave 13 States	5	17.5	22.6	1.6	1.7	4.3	6.6	19.2	26.3

ESTIMATED REDUCTION FROM FULL YIELD OF COTTON CAUSED BY INSECTS IN THE WESTERN IRRIGATED AREAS IN 1948, 1949 AND 1950. (FROM REPORTS OF THE CROP REPORTING BOARD OF THE BUREAU OF AGRICULTURAL ECONOMICS, U.S.D.A)

State	Sucking Bugs			Other Insects			All Insects		
	1948:	1949:	1950:	1948:	1949:	1950:	1948:	1949:	1950:
Texas (Trans-Pecos Area)	2	2	3	2	4	4	4	6	7
New Mexico	1	1	2	3	4	3	4	5	5
Arizona	2	3	1	1	1	1	3	4	2
California	1	1	1	1	2	1	2	3	2
Average for Area	1.2	1.5	1.4	1.4	2.3	1.6	2.8	3.8	3.0

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PREPARED SEPTEMBER 19, 1951